Amendments to the Specification:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Please replace paragraph [0041] and [0042] with the following rewritten paragraphs:

[0041] Fig. 6 illustrates a schematic diagram of an exemplary combustor-reformer, wherein the reformer is coupled with the combustor. The coupled reformer-combustor 100 is configured to be disposed in a cylindrical pressure shell 118. The thickness of the pressure shell is designed as per suitable codes depending on the maximum operating pressure of the reformer-combustor 100. The reforming process takes place in a tube 102, which tube is in intimate contact with the combustor 110, wherein the reformer 102 and the combustor 110 are concentric. The compressed air flows through the annular space 108 in the pressure shell as indicated by the airflow 106. The air enters the combustor 110 through the entry port 120. The fuel, such as hydrogen, natural gas or an off gas is also sent to the combustor 110 at the same location (not shown). The mixing of the air and fuel is achieved in the mixing zone 122. The combustion zone 124 primarily generates the heat of the combustion that is dissipated radially and axially through the surface 116, which surface is in contact with the reformer 102. The typical temperature in the combustion zone 124 of the combustor 110 may go up to about 1700 oC, a temperature range that is sufficient to provide substantial heat energy to the reforming process. In the process of heat transfer from the combustor 110 to the reformer 102, the liner of the combustor gets cooled thereby enhancing the life of the combustor. <u>The combustor and the reformer are separated by a wall, through which only heat can pass, but not material transfer occurs through the wall</u>. A mixture of reforming fuel and steam circulates in the annular space in the reforming tube 102 as indicated by the mixture flow path 104. The reformate, which typically comprises CO_2, CO, H_2, water and unburned fuel exits the reformer 102 through an opening 114.

[0042] Fig. 7 illustrates an upper section of yet another exemplary reformer combustor 130 wherein the combustor and the reformer are thermally coupled through combustor wall, impervious to material transfer. The combustor 134 is a pressure vessel wherein the cross-section of the vessel reduces along with the flow of the combusted gases as shown by the flow path 140. The combustor is an annular structure in the shape as illustrated in Fig. 7 when rotated 360 Degree along the centerline 154. The reformer 132 is another annular structure rotated 360 Degree along the same centerline 154. The combustor 134 comprises an upper liner 148 in intimate contact with the reformer 132 and a bottom liner 160. <u>The upper liner 148</u>

separates the combustor 132 and reformer 132. The liner 148 is impervious for material transfer, but allows heat to be transferred through the wall. The combustor 134 further comprises a pre-mixer 150, which pre-mixer 150 is configured to have ports through which fuel and oxidant can enter the combustor 134. In some embodiments, the premixed fuel and oxidant is injected into the combustor 134 through a nozzle comprising a swirler, which swirler comprises a plurality of swirl vanes that impart rotation to the entering oxidant and a plurality of fuel spokes that distribute fuel in the rotating oxidant stream. The oxidant 146, such as air is used for the combustion and the cooling of the bottom liner 160 of the combustor 134. The fuel and oxidant are mixed in an annular passage within the premix fuel nozzle before reacting within the combustor 134. The reformer 132 comprises a path 131 for introducing steam and a path 158 for introducing a reforming fuel. The mixture of the reforming fuel and steam flows through the path 136 wherein the endothermic reaction (1) absorbs the heat transferred from the combustor 134 into the reformer 132. The heat energy is transferred from the combustor 134 to the reformer 132 through radial and axial heat dissipation through conduction and convection thereby cooling the outer liner 148 of the combustor 134. The reformer 132 further comprises a catalyst bed 156, which catalyst bed 156 contains a reforming catalyst, such as nickel. The reformate flows out of the reformer 132 through a flow path 138. The inner liner 160 of the combustor 134 is cooled using a portion of the compressed air 146, wherein the air 142 is circulated though an annular space 144 between the inner liner 160 and the bottom shell 162 of the combustor.